In the Claims:

1. (Previously presented) A method of manufacturing a semiconductor device with a substrate and a semiconductor body which comprises at least one active semiconductor element, wherein, after the semiconductor element has been formed, a layered structure is provided comprising at least one electrically insulating layer or one electrically conductive layer, wherein an opening is formed in the layered structure by means of a patterned photoresist layer and an etch process, wherein residues are formed at the surface of the semiconductor body during the etch process, wherein the photoresist layer is ashed, after the etch process, by means of a treatment with an oxygen-containing compound, after which the surface of the semiconductor body is cleaned using a cleaning agent containing a diluted solution of an acid in water and being heated to a temperature above room temperature, as a result of which the residues formed are removed from the surface, characterized in that sulphuric acid is chosen for the acid in the cleaning agent.

2. (Original) A method as claimed in claim 1, characterized in that a solution of exclusively sulphuric acid and demineralized water is chosen for the diluted solution of the acid.

3. (Original) A method as claimed in claim 1, characterized in that a solution of sulphuric acid and phosphoric acid in demineralized water is chosen for the diluted solution of the acid.

4. (Currently Amended) ~~A method as claimed in claim 3, characterized in that~~ A method of manufacturing a semiconductor device with a substrate and a semiconductor body which comprises at least one active semiconductor element, wherein, after the semiconductor element has been formed, a layered structure is provided comprising at least one electrically insulating layer or one electrically conductive layer, wherein an opening is formed in the layered structure by means of a patterned photoresist layer and an etch process, wherein residues are formed at the surface of the semiconductor body during the etch process, wherein the photoresist layer is ashed, after the etch process, by

means of a treatment with an oxygen-containing compound, after which the surface of the semiconductor body is cleaned using a cleaning agent containing a diluted solution of sulphuric acid and phosphoric acid in demineralized water, and being heated to a temperature above room temperature, as a result of which the residues formed are removed from the surface, characterized in that sulphuric acid is chosen for the acid in the cleaning agent, wherein the phosphoric acid concentration is chosen to range between 0.01 and 5% by weight, and preferably between 0.1 and 1% by weight.

5. (Previously presented) A method as claimed in claim 1, characterized in that the sulphuric acid concentration is chosen to range between 0.01 and 10% by weight, and preferably between 0.5 and 5% by weight.

6. (Currently Amended) ~~A method as claimed in claim 1, characterized in that~~ A method of manufacturing a semiconductor device with a substrate and a semiconductor body which comprises at least one active semiconductor element, wherein, after the semiconductor element has been formed, a layered structure is provided comprising at least one electrically insulating layer or one electrically conductive layer, wherein an opening is formed in the layered structure by means of a patterned photoresist layer and an etch process, wherein residues are formed at the surface of the semiconductor body during the etch process, wherein the photoresist layer is ashed, after the etch process, by means of a treatment with an oxygen-containing compound, after which the surface of the semiconductor body is cleaned using a cleaning agent containing a diluted solution of an acid in water and being heated to a temperature above room temperature, as a result of which the residues formed are removed from the surface, characterized in that sulphuric acid is chosen for the acid in the cleaning agent, wherein the temperature is chosen in the range between 20 and 60° ~~C., and preferably between 30 and 45°~~ C.

7. (Previously presented) A method as claimed in claim 1, characterized in that the cleaning operation is carried out for 2 to 30 minutes.

8. (Previously presented) A method as claimed in claim 1, characterized in that the

cleaning step using the cleaning agent is followed by a rinsing step using demineralized water, and such a cycle of cleaning followed by rinsing is subsequently repeated a number of times.

9. (Original) A method as claimed in claim 8, characterized in that the cycle of cleaning step followed by rinsing step is repeated 2 to 4 times.

10. (Currently Amended) ~~A method as claimed in claim 1, characterized in that~~ A method of manufacturing a semiconductor device with a substrate and a semiconductor body which comprises at least one active semiconductor element, wherein, after the semiconductor element has been formed, a layered structure is provided comprising at least one electrically insulating layer or one electrically conductive layer, wherein an opening is formed in the layered structure by means of a patterned photoresist layer and an etch process, wherein residues are formed at the surface of the semiconductor body during the etch process, wherein the photoresist layer is ashed, after the etch process, by means of a treatment with an oxygen-containing compound, after which the surface of the semiconductor body is cleaned using a cleaning agent containing a diluted solution of an acid in water and being heated to a temperature above room temperature, as a result of which the residues formed are removed from the surface, characterized in that sulphuric acid is chosen for the acid in the cleaning agent, wherein the cleaning process is completed by rinsing the semiconductor body with hot, i.e. 60 to 90° C. and preferably 70 to 75° C., demineralized water.

11. (Previously presented) A method as claimed in claim 1, characterized in that the cleaning step is carried out in a spray tool.

12. (Previously presented) A method as claimed in claim 1, characterized in that the layered structure is composed of at least one electrically insulating layer and at least one metal layer, and an electric connection of the semiconductor element is formed by means of the metal layer.

13. (Previously presented) A method as claimed in claim 12, characterized in that the electric connection is formed as a tungsten filled via which is contacted at the upper side by means of an aluminum-containing or aluminum-copper-containing conductor track which leaves part of the tungsten uncovered.

14. (Previously presented) An apparatus for use in a method as claimed in claim 1, comprising: a reservoir with concentrated sulphuric acid, a supply of demineralized water, a mixing unit for mixing sulphuric acid provided by the reservoir and demineralized water provided by the supply thereby obtaining the cleaning agent, and a cleaning station for receiving the semiconductor body and the cleaning agent, the cleaning station being arranged to bring the semiconductor body in contact with the cleaning agent.

15. (Original) An apparatus as claimed in claim 14, wherein the mixing unit is arranged for mixing of sulphuric acid between 0.01 and 10% by weight, and preferably between 0.5 and 5% by weight with demineralized water.